



Autoclave vs. Cetylcide II vs. Glass Bead Sterilizer: Which is most effective?

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Background

- The use of sterile instruments is of utmost importance in a clinical setting
- Glass Bead sterilization may effectively disinfect instruments using dry heat, rather than steam under pressure or chemical means.
- We are unaware of any reports in the literature evaluating this technology in podiatric practices.
- Autoclaving is currently the gold standard for sterilization, while Cetylcide II is commonly used in clinical practice.

Aim

- The purpose of this study was to evaluate the effectiveness of Glass Bead Sterilization in comparison to that of the autoclave and Cetylcide II.

Methods

- Sterile trypticase soy broth (TSB) was inoculated with 10.5×10^8 CFU/mL of each of the following organisms: *E. coli*, *S. epidermidis*, *S. aureus* and *P. aeruginosa*.
- Instruments were autoclaved and then assigned to groups A, B, or C, representing sterilization by autoclave, glass bead sterilizer, and Cetylcide II, respectively.
- Each set of instruments were soaked in 80mL of contaminated TSB for 30 minutes and allowed to dry for 10 minutes.
- Instruments were rubbed with a sterile cotton swab which was then plated on Sheep Blood Agar to ensure contamination.
- Instruments were then sterilized as stated above and rubbed with a sterile cotton swab then plated on Sheep's Blood Agar to determine the presence of bacteria.
- Bacillus spore strips were independently inserted into the Glass Bead Sterilizer for 10s and into the autoclave for 30 minutes.

Discussion

- Glass bead sterilization is as effective as the use of an autoclave and provides a more effective means of sterilization than Cetylcide II. Long term use of a Glass Bead Sterilizer may be more cost effective than the use of Cetylcide II because beads only require replacement every three months, and Glass Bead sterilization is effective in only a fraction of the time required by an autoclave or Cetylcide II. Passing the Bacillus spore strip test implies that in 10s, the Glass Bead Sterilizer effectively destroys even the most heat resistant bacteria.

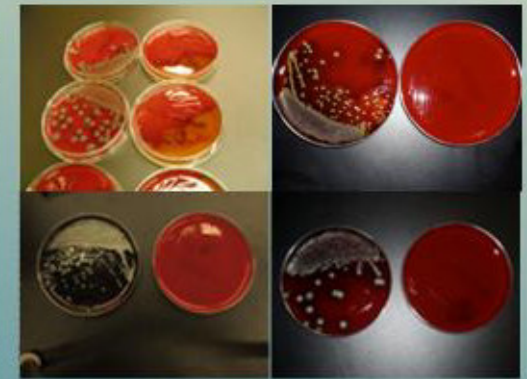
Conclusions

- This study concludes that Glass Bead Sterilization, for clinical use, is as effective as using an autoclave and more effective than Cetylcide II.



Organism	Autoclave	Glass Bead	Cetylcide II
<i>E. coli</i>	NG	NG	NG
<i>P. aeruginosa</i>	NG	NG	NG
<i>S. aureus</i>	NG	NG	+
MRSA	NG	NG	NG
<i>C. albicans</i>	NG	NG	NG
<i>S. epidermidis</i>	NG	NG	+
Spore Strips	Pass	Pass	N/A

NG= No Growth
+= Bacterial Colonies Present



□ Bacterial cultures, before and after Glass Bead sterilization. Clockwise from top left: *E. Coli*, *S. aureus*/*S. epidermidis*, Methicillin-resistant *S. aureus*, *P. aeruginosa*